

**We claim:**

1. A process for recovering 3-aminomethyl-3,5,5-trimethylcyclohexylamine (isophoronediamine, IPDA) having a cis/trans isomer ratio of at least 73/27 by fractional distillation, which comprises the following steps:

- a) providing IPDA in a cis/trans isomer ratio of  $< 73/27$ ;
- b) feeding IPDA into the middle region of a distillation column having internals and distilling the IPDA in this distillation column at a temperature of from 5 to 300°C and a pressure of from 10 to 2000 mbar;
- c) optionally further purifying the IPDA obtained by step b) by distilling in at least one further column;

where steps b) and c) separate the IPDA used in step a) into at least five fractions ia) to iv):

- ia) the organic proportion of a fraction of impurities having lower boiling points than trans-IPDA,
- ib) the aqueous proportion of a fraction of impurities having lower boiling points than trans-IPDA,
- ii) a fraction of impurities having higher boiling points than cis-IPDA,
- iii) an IPDA fraction having a cis/trans isomer ratio of  $\geq 73/27$  and
- iv) an IPDA fraction having a cis/trans isomer ratio of  $\leq 66/34$ .

2. A process as claimed in claim 1, wherein the proportion of cis- and trans-IPDA in the fraction ib) obtained by steps b) and c) is  $\leq 2\%$  by weight, based on the total weight of fraction ib).

3. A process as claimed in claim 1 or 2, wherein IPDA is used in step a) which has a cis/trans isomer ratio of  $< 70/30$ .

4. A process as claimed in any of claims 1 to 3, wherein the distillation column used in step b) has a separating performance of at least 20 theoretical plates.

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5. A process as claimed in any of claims 1 to 4, wherein, when one or two columns are used, at least one column is a dividing wall column.
- 5 6. A process as claimed in any of claims 1 to 5, wherein two columns are used, of which one is a dividing wall column.
7. A process as claimed in any of claims 1 to 4, wherein two columns are used and one of the fractions iii) or iv) is removed at a sidestream takeoff.
- 10 8. A process as claimed in any of claims 1 to 4, wherein three conventional distillation columns are connected to one another.
- 15 9. A process as claimed in any of claims 1 to 8, wherein the internals in the column/s used in steps b) and/or c) are selected from the group of random packings, sheet metal structured packings and woven metal structured packings.